

REMARKS

Claims 1-6, 14-32, 41-48, 86, 88, and 91 are pending in the present application. Claims 1-32, 41-48, 63-86, 88, and 91 were examined. Claims 7-13 and 63-85 have been cancelled by amendment.

In the office action mailed December 28, 2005 (the "Office Action"), the Examiner rejected claims 1-28, 41-48, 63, 64, 67-71, 76, 78, 80, 82, 84, 86, 88, and 91 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,731,301 to Sato *et al.* (the "Sato patent"). The Examiner further rejected claims 29-32 and 65, 66, 72-75, 77, 79, 81, 83, and 85 under 35 U.S.C. 103(a) as being unpatentable over the Sato patent in view of U.S. Patent No. 6,501,483 to Wong *et al.* (the "Wong patent") or Don P. Mitchell, "Generating Antialiased Images at Low Sampling Densities" (the "Mitchell reference").

Claims 7-13 and 63-85 have been cancelled by amendment, and consequently, the Examiner's rejection of these claims is now moot.

As previously mentioned, claims 1-28, 41-48, 63, 64, 67-71, 76, 78, 80, 82, 84, 86, 88, and 91 under 35 U.S.C. 102(e) as being anticipated by the Sato patent.

Claims 1, 14, 23, 27, 41, 42, 86, and 91 are patentably distinct from the Sato patent because the Sato patent fails to disclose the combination of limitations recited by the respective claim.

For example, with reference to claim 1, the Sato patent fails to disclose a method for calculating values for pixels of an image that includes calculating less than three sample values for pixels of an image in accordance with a sampling pattern for each pixel, the sampling pattern for consecutive pixels alternating between a first and a second sampling pattern, each sampling pattern defining one or more sampling locations at which sample values are calculated, the sampling locations being relative to a pixel. The Sato patent describes a computer graphics rendering system capable of super-sampling according to various sampling patterns laid out in a 4x4 subpixel matrix, each sampling pattern having four or more samples per pixel. Generally, the "sparse sampling" described in the Sato patent and shown in Figures 24-29 and 34-38 uses only four of 16 possible sample locations per pixel. Other sampling patterns are described and illustrated in Figures 31-33 as well, but are all based on a 4x4 matrix and have more than four sub-sample locations.

The deficiencies of the Sato patent previously discussed with reference to claim 1 are also relevant to claims 14, 41, 42, and 86. Claim 14 recites a method for generating an image having pixels that includes calculating less than three sample values for pixels of the image in accordance with a plurality of sampling patterns, one sampling pattern per pixel, one pair of sampling points per sampling pattern. Claim 41 recites a method for calculating values for pixels of an image that includes calculating sample values for pixels of the image in accordance with one or more sampling patterns, the region of potential sampling locations relative to a pixel considered as divided evenly into a four-by-four array of sub-regions each sampling pattern having less than three sample locations relative to a pixel. Claim 42 recites a method for calculating values for pixels of an image that includes calculating sample values for pixels of the image in accordance with a sampling pattern, the region of potential sampling locations relative to a pixel considered as divided evenly into a four-by-four array of sub-regions, the sampling pattern having only two sample locations relative to a pixel. Claim 86 recites an apparatus for rendering an image that samples at only two sample locations relative to a pixel in accordance with a sampling pattern. As previously discussed with respect to claim 1, the Sato patent is directed to a computer graphics rendering system that performs sparse sampling taking four or more samples per pixel according to sampling patterns laid out in a 4x4 subpixel matrix.

With respect to claims 23, 27, and 91, the Sato patent fails to disclose sampling at different sampling rates for pixels of an image. Claim 23 recites a method for calculating values for pixels that includes calculating sample values for pixels of the image in accordance with a plurality of sampling rates, the sampling rate differing for at least two pixels of the image. Claim 27 recites a method for calculating values for pixels of an image that includes calculating sample values for pixels of the image in accordance with first and second sampling rates, the sampling rate remaining constant for consecutive pixels arranged along any one given line parallel to the first axis and varying between the first and second sampling rates for consecutive pixels arranged along any one given line parallel to the second axis. Claim 91 recites an apparatus for rendering an image having pixels where the apparatus calculates samples values for pixels in accordance with first and second sampling rates.

As previously discussed, the Sato patent describes various sparse sampling patterns arranged according to a 4x4 subpixel matrix. In each of the embodiments described in

the Sato patent, the sampling rate (i.e., number of samples) per pixel is the same. For example, with reference to Figure 24 of the Sato patent, four pixels are arranged in a 2x2 matrix of pixels. Each of the four pixels is divided into 16 subpixel locations with four samples taken per pixel. In the horizontal direction, the sampling rate, namely four samples per pixel, is the same. Likewise, the sampling rate in the vertical direction, namely four samples per pixel, is also the same. The other embodiments described in the Sato patent similarly have constant sampling rates. In contrast, as previously described, claims 23, 27, and 91 include limitations directed to having at least two different sampling rates for pixels of an image.

For the foregoing reasons, claims 1, 14, 23, 27, 41, 42, 86, and 91 are patentably distinct from the Sato patent. Claims 2-6, which depend from claim 1, claims 15-22, which depend from claim 14, claims 24-26, which depend from claim 23, claim 28, which depend from claim 27, claims 43-48, which depend from claim 42, and claim 88, which depends from claim 86, are similarly patentably distinct from the Sato patent based on their dependency from a respective allowable base claim. Therefore, the rejection of claims 1-6, 14-28, 41-48, 86, 88, and 91 under 35 U.S.C. 102(e) should be withdrawn.

As previously mentioned, claims 29-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Sato patent in view of the Wong patent and claims 65, 66, 72-75, 77, 79, 81, 83, and 85 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Sato patent in view of the Mitchell reference.

With reference to the rejection of claims 29-32, the Wong patent has been cited by the Examiner for teaching selecting a sampling pattern from a plurality of sampling patterns and further teaching non-uniform sampling patterns and non-uniform pixel changes. *See* the Office Action at page 32. The Mitchell reference has been cited by the Examiner for teaching a non-uniform or adaptive sampling pattern with variations in local sampling densities for super-sampling cells or pixel regions or pixels and randomly selecting the sampling pattern. *See* the Office Action at page 33.

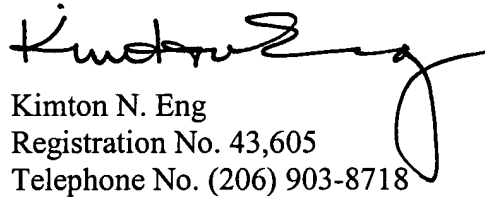
Even if it is assumed for the sake of argument that the Examiner's characterization of the Wong patent and the Mitchell reference are accurate, they fail to make up for the deficiencies of the Sato patent previously discussed with reference to claims 1, 14, 23, 27, 41, 42, 86, and 91. Consequently, the combined teachings of the Sato patent and the Wong

patent, and the combined teachings of the Sato patent and the Mitchell reference, fail to teach or suggest the combination of limitations recited by the respective claim. Therefore, the rejection of claims 29-32, 65, 66, 72-75, 77, 79, 81, 83, and 85 under 35 U.S.C. 103(a) should be withdrawn.

All of the claims pending in the present application are in condition for allowance. Favorable consideration and a timely Notice of Allowance are earnestly solicited.

Respectfully submitted,

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